



# ENCAP Visual Field Guide: WATER SUPPLY

*for quick identification of serious environmental concerns in small-scale water supply activities*

## About the ENCAP Visual Field Guide Series

ENCAP Visual Field Guides are intended for use during field visits by USAID and Implementing Partner staff who are not environmental specialists.

They are intended to ensure that the most common serious environmental deficits in activity design and management are quickly and easily identified for corrective action.

Note that an activity may be subject to environmental design and management conditions specified in its Environmental Assessment or Initial Environmental Examination but not captured in this document.

The field guides complement the more detailed guidance found in USAID's *Environmental Guidelines for Small Scale Activities in Africa*,

Consult the *Guidelines* for guidance regarding remedies, mitigation and corrective actions.

The *Guidelines* are available at [www.encapafrika.org/egssaa.htm](http://www.encapafrika.org/egssaa.htm).

*Disclaimer: This field guide was prepared by The Cadmus Group, Inc. for International Resources Group, Ltd. (IRG) under USAID Africa Bureau's Environmental Compliance and Management Support (ENCAP) Program, Contract Number EPP-I-00-03-00013-00, Task Order No. 11. Its contents are the sole responsibility of the authors and do not necessarily reflect the views of USAID or the United States Government.*

**PROBLEMS.** A "YES" answer to any of the following indicates an environmental deficit in activity design or management. For USAID-funded activities, corrective action will be required. Notify the Chief of Party and the USAID Project Manager.

### 1. Is a tank or well supplying water for domestic use uncovered?

YES		<i>Issue: Easily results in contamination of water with pathogens. Can provide breeding habitat for disease vectors, including mosquitoes.</i>
NO		

*(Photo depicts uncovered well.)*

### 2. Is there stagnant water around the water supply point?

YES		<i>Issue: May provide habitat for disease vectors and attract livestock (see below).</i>
NO		

*There is a high likelihood that stagnant water around a shallow well will contaminate water in the well.*

### 3. Do livestock share the water supply point?

YES		<i>Issue: Easily results in contamination of water with livestock feces &amp; body fluids.</i>
NO		

*May attract disease vectors (particularly flies) which are themselves a source of contamination.*

### 4. Is there soil erosion in the vicinity of the water supply point?

YES		<i>Issue: Usually reduces the service period of the supply point by undercutting concrete aprons, well covers, and pump footings.</i>
NO		

*Often leads to stagnant water around the supply point (see question 2, above).*

**Take a water sample**

Potability is determined by water quality tests. Prior to public provision all USAID-funded water supplies should be tested for arsenic and fecal coliform at a minimum—and ideally for all the contaminants listed below. (Simple test kits are available for both arsenic and fecal coliform. See below.)

A field visit is an opportunity to take a water quality sample for testing. A sample should *definitely* be taken if any of the conditions noted in this field guide as risk factors for contamination are present.

If you do not have a sample kit, use a clean glass jar; keep the jar out of excessive heat and direct sunlight.) Samples should be delivered for lab or kit test within 2 days.

USAID requires arsenic testing for all USAID-funded projects supplying groundwater, as there is currently no way to determine—prior to drilling the well—whether groundwater contains arsenic. **Quarterly testing must continue for one year.**

**Selected Water Quality Standards for Human Health\***


- Arsenic < 0.01 mg/L (10 ppb)
- Lead < 0.01 mg/L
- Total Coliforms *not detectable* in any 100mL sample
- Copper < 2 mg/L
- Nitrate (as NO<sub>3</sub>) < 50 mg/L
- Nitrite (as NO<sub>2</sub>) < 0.2 mg/L for long-term exposure
- Fluoride < 1.5 mg/l

\*WHO, *Guidelines for Drinking-Water Quality* (3rd Edition), 2006

**Test kits.** Hach Arsenic Test Kit (approved by USAID): [www.hach.com](http://www.hach.com). Coliform test kits include; e.g. Idexx Colilert ([www.idexx.com/water/colilert/](http://www.idexx.com/water/colilert/)) & Coliscan Easygel ([www.micrologylabs.com/](http://www.micrologylabs.com/)).

**POTENTIAL PROBLEMS.** A “YES” answer to any of the following indicates that an environmental concern MAY exist; follow-up is required. Notify the Chief of Party and the USAID Project Manager.

**1. Is there a pit latrine, waste dump, or obviously contaminated surface water within 30m of a shallow well?**

YES		Issue: High possibility well is contaminated with pathogens or chemicals.
NO		Note: look beyond the boundaries of the project site. As in the picture, facilities of concern can be hidden behind nearby trees or buildings.

**2. Do nearby surface waters show evidence of being abnormally low for the season?**

YES		Issue: <u>May</u> indicate overdraw of ground water or excess diversion, with adverse impacts on ecosystems and other users.
NO		In coastal areas, overdraw of groundwater may lead to intrusion by saline water.

**3. Are nearby surface waters overgrown with aquatic plants/algae?**

YES		Issue: Often indicates that surface waters are contaminated with fertilizers and/or sewage. If so, shallow groundwater is also likely to be contaminated.
NO		(left photo: FAO; right photo: <a href="http://www.play-with-water.ch">www.play-with-water.ch</a> )

	YES	NO
<p><b>4. Are children getting water-borne illnesses more frequently and/or more severely than in the past, and are these children drinking from a USAID-provided water source?</b> →Issue: Indicates potential water contamination.</p>		
<p><b>5. Taste the water.</b> Does it taste bad or salty? Are users complaining of a bad taste? →Issue: Indicates potential water contamination or saline intrusion (overdraw of ground water).</p>		
<p><b>6. Look at &amp; smell the water.</b> Is it off-color? Is there sediment? Does it smell bad? Are users complaining of any these issues? → Issue: Indicates potential water contamination.</p>		
<p><b>7. Are wells going dry</b> (seasonally) at the inspection site or in the surrounding area that did not do so in the past? → Issue: Indicates potential overdraw of groundwater.</p>		
<p><b>8. Is water leaking</b> from tanks/pipes/supply points? → Issue: Particularly in areas where water quantity is constrained, constitutes wasteful use of a critical environmental resource.</p>		